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RISK OF HEAT STRESS CONDITIONS FOR SUGARCANE HARVESTERS IN COSTA RICA

Jennifer Crowe,¹ Andrés Robles,² Bryan Román,² Catharina Wesseling,¹ Tord Kjellström,³ David Morales,¹ Maria Nilsson³ ¹*Universidad Nacional, Heredia, Costa Rica;* ²*Instituto Tecnológico de Costa Rica, Cartago, Costa Rica;* ³*Umea University, Umea, Sweden*

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Objectives The aim of this study was to measure extreme heat exposure and the risk for heat stress conditions for sugarcane harvesters in Costa Rica.

Methods Wet Bulb Globe Temperature (WBGT) measurements were taken from 7:30 to 12:00 over 7 days in sugarcane

fields where workers were harvesting. Spanish guidelines (NTP) were used to calculate the metabolic demand for harvesting and the corresponding limit value (LV) of WBGT. (Values over the LV indicate heat stress conditions.) The safe amount of working time was calculated with the Required Sweat Rate Index which allows for an estimation of dehydration and overheating risk according to sweat production and evaporation.

Results The metabolic rate was 412 kcal/h and the WBGT LV was 26°C. The average WBGTs ranged from 27°C to 32°C, while high WBGTs ranged from 28 to 34°C. Workers were therefore under heat stress conditions for the majority of their work shift. The Required Sweat Rate Index indicated a risk of excessive elevation of core body temperature. The corresponding recommendation for avoiding this risk would allow full-capacity work only 20 min out of every hour.

Conclusions This study demonstrates that sugarcane harvesters in Costa Rica are working in heat stress conditions. These conditions are particularly troubling considering the likely increases in temperatures and/or frequency of heat waves due to climate change as well as the socioeconomic context of workers, of which, many are migrants. Immediate action is required to protect worker health and safety while at the same time maintaining productivity.